



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

December 5, 2005

MEMORANDUM TO: Division Engineers

FROM: W. S. Varnedoe, P.E.
Chief Engineer – Operations

SUBJECT: Intersection Inspection Checklists

A few months ago, I advised you of several process improvements that were generated from the 2005 Contractor/DOT Conference. One of the proposals focused on improving Contractor/DOT communication to facilitate project closeout with a recommendation to develop a list of common punch list items historically encountered on projects. In an effort to continue the communication of DOT expectations and educate project personnel about critical inspection needs, the ITS and Signals Unit has developed an Intersection Inspection Checklist. This checklist should be presented to the Contractor and Signal Subcontractor at the Preconstruction Meeting. The Contractor should incorporate the Intersection Inspection Checklist into their quality control program and be expected to correct deficiencies prior to final inspection.

It remains critical that we communicate expectations and concerns with the contractor throughout the life of our projects. Please review this information with your staff and ask them to begin using this new checklist on all projects immediately.

WSV:saj

Attachment

cc: Len A. Sanderson, P.E., State Highway Administrator
W. F. Rosser, P.E., Director of Field Operations
Lacy Love, P.E., Director of Asset Management
S. D. DeWitt, P.E., Director of Construction
Deborah Barbour, P.E., Director of Preconstruction
E. C. Powell, Jr., P.E., State Construction Engineer
Cecil Jones, P.E., State Materials Engineer
Kevin Lacy, P.E., CPM, State Traffic Engineer
Resident Engineers
District Engineers
Division Traffic Engineers
Roadway Construction Engineers
Berry Jenkins, P.E.

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LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

INTERSECTION INSPECTION CHECK-LIST NC PROJECT: _____

INTERSECTION LOCATION _____

SIGNAL INVENTORY NO. _____

PART I (to be completed by Resident Engineer's Office)

Inspected By: _____ Date Inspected: _____

1. Cabinet			
a. Exterior appearance, level/plumb?	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
b. Cabinet bottom, base adapter, & extension sealed & weather-tight?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
c. Attached securely to foundation?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
d. Foundation has required spare conduit stubouts?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
e. Foundation pad properly sized?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
f. Both doors fully open with no obstructions?	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
g. Attached securely to pole?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
h. Inventory Number on Cabinet?	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
<hr/>			
2. Markings - Centerline / Edgeline	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
Correct size and located properly?			
<hr/>			
3. Markings - Lane-use	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
Correct size and located properly?			
<hr/>			
4. Markings - Stop Bars	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
Correct size and located properly?			
<hr/>			
5. Markings - Crosswalk and Wheel Chair Ramps	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
Correct size and located properly?			
<hr/>			
6. Vehicular and Pedestrian Signal Heads	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
a. Correct signal face configuration?			
b. Proper height?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
c. Aligned properly with approach?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>

d. Gooseneck and balance adjuster tightened?	APPROVED <input type="text"/>	NOT APPLICABLE <input type="text"/>	REJECTED <input type="text"/>
e. Utility lines, etc. do not block view?	APPROVED <input type="text"/>	NOT APPLICABLE <input type="text"/>	REJECTED <input type="text"/>
<hr/>			
7. Signs - Static and Blank-out	APPROVED	NOT APPLICABLE	REJECTED
Correct message, size, location?	<input type="text"/>	<input type="text"/>	<input type="text"/>
<hr/>			
8. Inductive Detection Loops	APPROVED	NOT APPLICABLE	REJECTED
a. Installed properly?	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. Tail section wires twisted?	APPROVED <input type="text"/>	NOT APPLICABLE <input type="text"/>	REJECTED <input type="text"/>
c. Located per plans?	APPROVED <input type="text"/>	NOT APPLICABLE <input type="text"/>	REJECTED <input type="text"/>
d. Loop numbers and polarity marked on cable ties in junction boxes?	APPROVED <input type="text"/>	NOT APPLICABLE <input type="text"/>	REJECTED <input type="text"/>
e. Resistance and megger readings forwarded to Division Traffic Engineer?	YES <input type="text"/>	NOT APPLICABLE <input type="text"/>	NO <input type="text"/>
<hr/>			
9. Junction Boxes - Traffic Signal and Fiber Optic	APPROVED		REJECTED
a. Properly sized per plans?	<input type="text"/>		<input type="text"/>
b. Top flush with finish grade?	APPROVED <input type="text"/>		REJECTED <input type="text"/>
c. Stone base added before placing junction box?	APPROVED <input type="text"/>		REJECTED <input type="text"/>
d. Conduits sealed?	APPROVED <input type="text"/>		REJECTED <input type="text"/>
e. Proper message on cover?	APPROVED <input type="text"/>		REJECTED <input type="text"/>
f. Cover secured and in good condition?	APPROVED <input type="text"/>		REJECTED <input type="text"/>
<hr/>			
10. Electrical Service	APPROVED	NOT APPLICABLE	REJECTED
a. Grounding electrode wire exothermically welded to ground rods?	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. Ground rod resistance recorded and forwarded to Division Traffic Engineer?	YES <input type="text"/>	NOT APPLICABLE <input type="text"/>	NO <input type="text"/>
NOTE: A resistance reading of 0.7 ohms indicates an error in the measurement.*			
<hr/>			
11. Pole-Line Hardware	APPROVED	NOT APPLICABLE	REJECTED
a. Proper type (angle, sidewalk, horizontal) of guy used?	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. Proper separation between holes in wood pole?	APPROVED <input type="text"/>	NOT APPLICABLE <input type="text"/>	REJECTED <input type="text"/>
c. No strandlinks used in final stage?	APPROVED <input type="text"/>	NOT APPLICABLE <input type="text"/>	REJECTED <input type="text"/>
d. Messenger cable and guys bonded properly?	APPROVED <input type="text"/>	NOT APPLICABLE <input type="text"/>	REJECTED <input type="text"/>
<hr/>			

12. Wood Poles	APPROVED	NOT APPLICABLE	REJECTED
a. Pole tagged or branded?	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. Pole is installed to be plumb?	<input type="text"/>	<input type="text"/>	<input type="text"/>
c. Ground wire stapled to wood pole?	<input type="text"/>	<input type="text"/>	<input type="text"/>
d. Pole grounding electrode installed?	<input type="text"/>	<input type="text"/>	<input type="text"/>

13. Metal Poles	APPROVED	NOT APPLICABLE	REJECTED
a. Anchor bolt nuts torqued and rechecked after 48 hours?	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. Pole is installed to be plumb?	<input type="text"/>	<input type="text"/>	<input type="text"/>
c. Identification tag attached?	<input type="text"/>	<input type="text"/>	<input type="text"/>
d. Pole grounding electrode installed?	<input type="text"/>	<input type="text"/>	<input type="text"/>

14. Fiber Optic Cable	APPROVED	NOT APPLICABLE	REJECTED
a. Cable ID markers installed at poles?	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. Delineator markers installed?	<input type="text"/>	<input type="text"/>	<input type="text"/>
c. Snowshoes installed properly?	<input type="text"/>	<input type="text"/>	<input type="text"/>
d. Spare cable provided per plans?	<input type="text"/>	<input type="text"/>	<input type="text"/>
e. Splice enclosures secured, sealed, and weathertight?	<input type="text"/>	<input type="text"/>	<input type="text"/>

15. Conduits and Risers	APPROVED	NOT APPLICABLE	REJECTED
a. Riser assemblies strapped properly?	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. For fiber optic and coaxial cable, heat-shrink tubing seals top of riser?	<input type="text"/>	<input type="text"/>	<input type="text"/>
c. For other electrical cables, weatherhead seals top of riser?	<input type="text"/>	<input type="text"/>	<input type="text"/>
d. Mechanical seals installed for fiber optic cable at conduit ends?	<input type="text"/>	<input type="text"/>	<input type="text"/>
e. Moldable duct sealer used to seal other cables at conduit ends?	<input type="text"/>	<input type="text"/>	<input type="text"/>

16. Has Part 2 of this checklist been completed?	YES	NO
	<input type="text"/>	<input type="text"/>

INTERSECTION INSPECTION CHECK-LIST

NC PROJECT: _____

INTERSECTION LOCATION _____

SIGNAL INVENTORY NO. _____

PART II (to be completed by Division Traffic Engineering Office)

Inspected By: _____ Date Inspected: _____

17. Cabinet	APPROVED	REJECTED
a. Is door seal weather-tight?	<input type="checkbox"/>	<input type="checkbox"/>
b. Is filter clean and replaceable?	<input type="checkbox"/>	<input type="checkbox"/>
c. Is conduit installed properly?	<input type="checkbox"/>	<input type="checkbox"/>
d. Cabinet wired neatly?	<input type="checkbox"/>	<input type="checkbox"/>
e. Wires labeled?	<input type="checkbox"/>	<input type="checkbox"/>
f. Documents in envelope in drawer?	<input type="checkbox"/>	<input type="checkbox"/>
g. Fan & thermostat operate properly?	<input type="checkbox"/>	<input type="checkbox"/>
h. Lights operational?	<input type="checkbox"/>	<input type="checkbox"/>
i. Loadswitches operational?	<input type="checkbox"/>	<input type="checkbox"/>
j. Flashers installed & operational?	<input type="checkbox"/>	<input type="checkbox"/>
k. Flash transfer relays installed?	<input type="checkbox"/>	<input type="checkbox"/>
l. Test switches call specified phase?	<input type="checkbox"/>	<input type="checkbox"/>
m. Police switches operate properly?	<input type="checkbox"/>	<input type="checkbox"/>
n. Ground isolated from neutral bus?	<input type="checkbox"/>	<input type="checkbox"/>
o. Metallic conduit bonded?	<input type="checkbox"/>	<input type="checkbox"/>

18. Electrical Service			
a. Main bonding jumper installed?	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
b. Other bonding installed properly?	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
c. Breaker size correct?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
d. Ground rod resistance OK? (0.7 ohm reading is unacceptable)	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
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19. Inductive Loop Vehicle Detection			
a. Resistance & megger readings OK?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
b. Detectors installed per plans?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
c. Detectors operating properly?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
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20. Other Vehicle Detection			
a. Detection zones per plans?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
b. Zones free from occlusion?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
c. Detection operating properly?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
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21. Pedestrian Detection and Signals			
a. Pushbuttons working properly?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
b. Signal heights correct?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
c. Audible signal working properly?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
d. Count-down timing correct?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
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22. Controller Programming and Intersection Operation			
a. General and phasing data verified?	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
b. Coordination data verified?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
c. Preemption data verified?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
d. Indicate OASIS software version	<hr/>		
e. Phasing & timing per plans?	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>

f. Startup sequence per plans?	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
g. Railroad Inspection completed?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
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23. Conflict Monitor Programming	APPROVED		REJECTED
a. Card programmed per plans?	<input type="checkbox"/>		<input type="checkbox"/>
b. Switches & jumpers set per plans?	APPROVED <input type="checkbox"/>		REJECTED <input type="checkbox"/>
<hr/>			
24. Fiber Optic Splice Enclosure Installed	APPROVED	NOT APPLICABLE	REJECTED
Labeled and Secured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>			
25. Fiber Optic Interface/ Splice Trays	APPROVED	NOT APPLICABLE	REJECTED
a. Splices acceptable and secured?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Pigtails and jumpers labeled?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
<hr/>			
26. Fiber Modems	APPROVED	NOT APPLICABLE	REJECTED
a. Mounted & operational?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cables labeled and secured?	APPROVED <input type="checkbox"/>	NOT APPLICABLE <input type="checkbox"/>	REJECTED <input type="checkbox"/>
<hr/>			
27. System Telemetry	APPROVED	NOT APPLICABLE	REJECTED
All devices communicate properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>			
28. Laptop Communicates with RS-232 Port	APPROVED	NOT APPLICABLE	REJECTED
on Controller and Conflict Monitor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<hr/>			
29. Removed and spare equipment has	APPROVED	NOT APPLICABLE	REJECTED
been returned to the Division?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discrepancies Noted

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ITEM NO.

Discrepancies Noted

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